

INL helps make mansion 'energy green'

Researcher Kerry Klingler extended the reach of INL energy innovations to include consulting with both the new owners of a Civil War-era mansion in downtown Salt Lake City and the city's mayor.

Attorneys Jon and Phil Lear operate an area law firm and recently bought the historic home of Civil War veteran Maj. George Downey on East South Temple for their law office. As they were renovating the 1893 mansion, Jon Lear mused with Klingler about how they might convert the mansion into an 'energy green' building.

Klingler offered that employing heat-pump technology is environmentally friendly and would work well. Soon the idea grew to include an innovative approach - using the city's sewer system as a heat exchanger. Buried several feet below the ground, the sewer system piping remains at a constant temperature, which is near 50 degrees Fahrenheit. Lear approached Salt Lake City Mayor Rocky Anderson with the idea of using the piping as a heat exchanger. After checking the details, Anderson endorsed the innovative test project, provided some city workers to assist, and is considering further applications in city-owned buildings and projects.

The pumps use heat absorbed by liquids moving through the heat exchange lines wrapped around the outside of the underground sewer lines to warm cool areas during winter. When ambient temperatures rise, the process is reversed by delivering cooler air from the same exchange lines. In fact, Downey Mansion uses three heat exchange systems - two in the ground and a 1,500-gallon pool in the basement - to adequately heat and cool the large mansion.

At a news conference in Salt Lake City on Apr. 3, the Lears credited Klingler and the INL with the innovative idea and then asked Klingler to comment. Klingler said, "It's a pleasure for me to represent the Idaho National Laboratory here at today's event. We're proud to have worked with Phil and Jon Lear, Mayor Anderson and the City of Salt Lake, in this innovative technology."

Jon Lear has worked frequently with INL on a series of projects over the years and at the news conference he said, "I think the INL is one of the most under utilized assets in the western United States. It was a conversation that I had with Kerry (Klingler) on a trip that stimulated our interest in heat pumps."

Jon Lear also told the media that their project is probably a first in using sewer system piping as a heat exchange source for a home or office. News reports indicate that the technology may be considered for use in the new City Creek Center development in downtown.

[View](#) the video. (6.4MB WMV)

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Photo: heat pump technology

INL researcher Kerry Klingler sits beside a pool that is part of an innovative heat pump technology system installed in the basement of the Downey mansion in Salt Lake City. The system is built upon ideas and counsel Klingler offered to the home's owners, Jon and Phil Lear.